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ABSTRACT

This study mapped the correspondence between indicators included in "Educational Outcomes and Indicators for Students Completing School," developed by the National Center on Educational Outcomes (NCEO), and indicators included in national data collection programs. These data collection programs included such efforts as the National Assessment of Educational Progress, the National Longitudinal Transition Study of Special Education Students, the National Education Longitudinal Study of 1992, the National Health Interview Survey, and others. Results indicated that important school completion outcomes for all students are substantially represented in the national data collection system. Across 13 national data collection programs, 91 percent of the NCEO school completion outcome indicators were found to be represented by at least one measure. However, it is currently not possible to produce comprehensive reports about the status of students with disabilities due to the significant exclusion of such students from data collection programs and the variable or nonexistent identification of such students in national data collection programs. Recommendations are provided to realize the potential for producing useful policy-relevant information regarding school completion outcomes for students with disabilities. (Contains 22 references.) (JDD)

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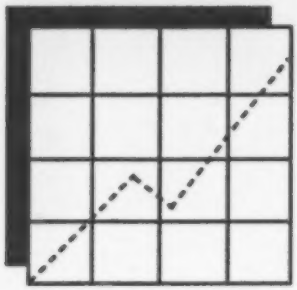

Matching Information in National Data Collection Programs to a Model of School Completion Outcomes and Indicators

National Center on Educational Outcomes

The College of Education
UNIVERSITY OF MINNESOTA

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in collaboration with

St. Cloud State University
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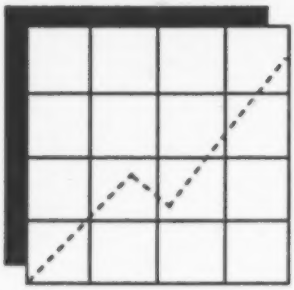

Matching Information in National Data Collection Programs to a Model of School Completion Outcomes and Indicators

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National Center on Educational Outcomes

The College of Education
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January, 1994

The National Center on Educational Outcomes (NCEO), established in 1990, works with state departments of education, national policy-making groups, and others to facilitate and enrich the development and use of indicators of educational outcomes for students with disabilities. It is believed that responsible use of such indicators will enable students with disabilities to achieve better results from their educational experiences. The Center represents a collaborative effort of the University of Minnesota, the National Association of State Directors of Special Education, and St. Cloud State University.

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Abstract

Reform initiatives throughout the entire educational system are shifting the focus toward outcomes and quantifiable data. With increasing frequency, the data needed to monitor and evaluate these reforms are being drawn from the nation's existing data collection programs. This investigation mapped the correspondence between indicators included in the NCEO comprehensive system of Educational Outcomes and Indicators for Students Completing School and indicators included in national data collection programs.

The results indicated that important school completion outcomes for all students are substantially represented in the national data collection system. Across 13 national data collection programs, 91% of the NCEO school completion outcome indicators were found to be represented by at least one measure. However, it is currently not possible to produce comprehensive reports about the status of students with disabilities due to the significant exclusion of such students from data collection programs and the variable or nonexistent identification of such students in national data collection programs. Recommendations are provided to realize the potential present for producing useful policy-relevant information regarding school completion outcomes for students with disabilities.

Matching Information in National Data Collection Programs to a Model of School Completion Outcomes and Indicators

The National Center on Educational Outcomes (NCEO) for students with disabilities was established in October, 1990 to work with state departments of education, national policy-making groups, and others to facilitate and enrich the development and use of indicators of educational outcomes for students with disabilities. It is believed that responsible use of indicators will enable students with disabilities to achieve better results from their educational experiences.

One of the four major strategic goals of the NCEO is to enhance the availability and use of outcomes information in decision making at the federal and state level. A variety of activities are subsumed under this goal. Two of the activities focus on reviewing the characteristics of major data sets in the national education data system as a prelude to secondary analysis of the data sets. The purpose of these activities is to determine the feasibility of extracting quality and credible policy-relevant information on the educational status and performance of students with disabilities (McGrew, Spiegel, Thurlow, Ysseldyke, Bruininks, & Shriner, 1992). The results of this critical review process will contribute to the NCEO strategic goals by:

1. Determining the extent to which the current national data collection programs consider students with disabilities when planning and implementing data collection.

2. Reviewing the extent to which students with disabilities are included or excluded in national data collection programs as a result of sample design and inclusion/exclusion procedures.

3. Reviewing the inclusion and exclusion procedures used in national data collection programs.

4. Determining the depth and breadth of outcomes included in national data collection programs and the extent to which these outcomes approximate a conceptual model for a comprehensive system of indicators.

5. Reviewing the means by which national data collection programs describe the functional characteristics of students with disabilities.

Secondary data analysis will be completed using existing data. It is hoped that the results of the review process indicate that sufficient quality data exist in the nation's data collection system to support credible analyses. The completion of these analyses will contribute to other NCEO strategic goals by providing information to include in the NCEO synthesis reports on the educational outcomes of children and youth with disabilities.

NCEO findings related to the first three goals listed above have been reported (McGrew, Algozzine, Spiegel, Thurlow, & Ysseldyke, 1993; McGrew, Thurlow, Shriner, & Spiegel, 1992; McGrew, Thurlow, & Spiegel, 1993). This report focuses on NCEO activities related to goal number four; the extent to which the indicators included in the NCEO comprehensive system of Educational Outcomes and Indicators for Students Completing School (Ysseldyke, Thurlow & Gilman, 1993) are included in national data collection programs. The purpose of this activity is to: (a) highlight potential gaps in the current national education data collection system, a system that has not had the benefit of evolving from an a priori conceptual model, and (b) provide an organizational framework from which to conduct secondary analysis (McGrew, Spiegel, Thurlow, Ysseldyke, Bruininks, & Shriner, 1992). The identification of information gaps in the current data collection system may serve to stimulate the modification of current data collection programs. It also may stimulate the development of new data collection programs that provide for more comprehensive conceptually-based national data. Hopefully, such data will provide useful,

policy-relevant information for all children.

The Current Context: Measurement-Driven Education Reform

Our nation is becoming "increasingly dependent on statistics for policy analysis and decision making" (Andrew, 1984, p. 51). Furthermore, "school reform has riveted national attention on the numbers" (Hanford & White, 1991). Reform initiatives throughout the entire educational system are shifting the focus toward outcomes and quantifiable data. With increasing frequency, the data needed to monitor and evaluate these reforms are being drawn from data bases in the nation's existing education data collection system.

The current national goals and educational indicators movements have produced a flurry of activity to identify data bases that include indicators to help monitor progress toward goal attainment. The Special Study Panel on Educational Indicators (1991) reported that the success of educational reform depends on the development of a "comprehensive education indicators information system capable of monitoring the health of the enterprise, identifying problems, and illuminating the road ahead" (p.6). Similar calls for the improvement of the existing national education data system and the development of new components to include in the system have been echoed in reports by the National Education Goals Panel (1991a) and the National Education Statistics Agenda Committee of the National Forum on Education Statistics (1990). Each of these groups has turned toward national data collection programs for indicators to monitor progress during the current wave of reform.

For example, in its report Measuring Progress Toward the National Education Goals: Potential Indicators and Measurement Strategies, the National Education Goals Panel (1991a) reports on how to measure progress toward the six national education goals by recommending the use of indicators from such data sets as the National Education Longitudinal Study (NELS) and the National Assessment of Educational Progress (NAEP). The National Education Statistics Agenda Committee also recommended using indicators from NELS and NAEP, as well as other data sets, to improve the data provided by the national education data system. Other groups looking for indicators from existing national data bases as a means to measure progress of children and youth include the Council of Chief State School Officers, Joining Forces (a coalition of the American Public Welfare Association and the Council of Chief State School Officers), Kids Count, and the NCEO, to name but a few.

In addition to the general education reform movement, recent reform initiatives in special education (Skrtic, 1991) are producing increased interest in analysis of existing national data bases. Since the passage of PL 94-142 in 1975, there has been over a decade of evaluation studies that have focused primarily on the issue of educational access for students with disabilities and implementation of the processes embodied in the law. Increasingly the question of "where's the beef?" has been asked from both within and outside of special education. Focus has recently turned toward evaluating the outcomes of special education, or, "where's the data?" on effectiveness (DeStefano & Wagner, 1991).

The NCEO Conceptual Model of Outcomes And Indicators

Secondary analyses of large extant data bases "have enormous potential for policy analysis and evaluation research" (Meyers & Rockwell, 1984, p. 5) and such analyses are on the increase. Analysis of indicators from national education data sets have produced policy-relevant reports such as NCES's The Condition of Education, OERI's Youth Indicators, Hispanic Education: A Statistical Portrait 1990 (De La Rosa & Maw, 1990), the 1990 Chartbook: Services for People with Disabilities (Amado, Lakin, & Menke, 1990), and the annual National Education Goals Report (National Education Goals Panel, 1991b, 1992, 1993). These and other similar reports have as their major thrust the communication of information to critical decision makers in the policy

arena. Such policy-relevant reports are only possible through the secondary analysis of a number of data sets.

An eight step process is used to guide NCEO secondary analysis activities (McGrew, Spiegel, Thurlow, Ysseldyke, Bruininks, & Shriner, 1992). The second step in this process is the development or use of a conceptual framework to guide the analyses. A conceptual framework serves to guide the analyses and insure that the informational needs and research questions are answered (DeStefano & Wagner, 1991).

The NCEO Conceptual Model of Outcomes (Ysseldyke et al., 1993) is serving this purpose for the NCEO secondary analysis activities. The NCEO model was designed to reflect outcomes that apply to all students, not just students with disabilities. Hundreds of educators, policymakers, and parents participated in a structured consensus building process (Vanderwood, Ysseldyke, & Thurlow, 1993) that resulted in the current model (Gilman, Thurlow & Ysseldyke, 1992; Ysseldyke et al., 1993). The NCEO Conceptual Model of Outcomes for School Completion is presented in Figure 1.

The conceptual framework depicted in Figure 1 shows the complete educational model, with Educational Resources (Inputs and Contexts) influencing Educational Opportunity and Process. These in turn, influence Outcome Domains, which have a return influence on both the resources and opportunity/process. The inclusion of two of the outcome domains (i.e., Presence and Participation; Accommodation and Adaptation) in the model has been controversial. A detailed discussion of issues surrounding the development and ongoing refinement of the NCEO model is presented in Ysseldyke et al. (1993).

The conceptual model is extended by the identification of outcomes within each outcome domain and indicators of the respective outcomes. Outcomes are the results of interactions between the students and the education system. Indicators are numbers or other symbolic representations that can be used to determine whether desired outcomes are achieved. Figures 2 through 9 present the outcomes and outcome indicators for each outcome domain for the NCEO model developed for students who have completed school (Ysseldyke et al., 1993).

The outcomes and indicators presented in Figures 2 through 9 served as the basis for the analyses summarized in this report. This investigation mapped the correspondence between the indicators of outcomes in the NCEO school completion model and indicators contained in recurring national data collection programs.

Method

Selection of Data Collection Programs

Thirteen national data collection programs were analyzed in the current investigation. These data collection programs represent a subset of 28 national data collection programs identified by the NCEO as being potentially useful in the extraction of policy-relevant information on the educational status and performance of students with disabilities (McGrew, Thurlow, Shriner, & Spiegel, 1992). The complete set of 28 data collection programs was targeted based on their: (a) potential usefulness in providing indicators of outcome domains in the NCEO conceptual model of educational outcomes for children and youth with disabilities (Ysseldyke et al., 1993), and (b) prominence in current efforts to monitor progress toward the attainment of national education goals.

The 13 data collection programs included in the current investigation are briefly described in Table 1. Since the purpose of this investigation was to determine the extent to which the NCEO school completion outcomes and indicators are included in recurring national data collection

programs, only those data collection programs that currently occur, or are planned to occur, on a regular basis were selected. In addition, only those data collection programs that included individuals of school completion age were included.

For example, the National Assessment of Educational Progress (NAEP), Current Population Survey (CPS), and National Health Interview Survey (NHIS) are data collection programs that occur on a regular basis and include individuals of this age group in their samples. These three data collection programs were included in this study. This contrasts with other data collection programs that may contain important outcomes and indicators but which are not recurring programs. For example, although the National Adolescent Student Health Survey (NASHS) contains numerous outcomes and indicators relevant to portions of the NCEO Conceptual Model of Outcomes, this data collection program was completed in 1988 and is not designed to be an ongoing, routine data collection program.

There were two exceptions to the above selection criteria. The National Education Longitudinal Study of 1988 (NELS:88) was selected since it represents the third in a series of longitudinal studies established as part of the National Center on Education Statistics (NCES) National Longitudinal Studies program (Nelson, 1991). Although the NELS:88 study will eventually end, a similar data collection program will most likely take its place as part of NCES's series of educational longitudinal studies. The National Longitudinal Transition Study (NLTS) of Special Education Students was the second exception. Although a fixed duration longitudinal data collection program, NLTS represents the first large-scale national survey of students with disabilities. It is important to determine the extent to which similar specialized national data collection programs of the future, or, other data collection programs that might incorporate some of NLTS's variables, results in broader coverage of the NCEO outcomes and indicators.

The relevant methodological and technical reports for each data collection program were obtained from the sponsoring agency. The section of each data collection program's codebook or user manual that presented the assessment instruments served as the source documents for the subsequent analyses.

Analysis of Data Collection Programs

The individual items in each data collection program's assessment instruments were compared to each NCEO outcome and outcome indicator listed in Figures 2 through 9. The goal was to identify assessment items that corresponded closely to the NCEO outcome indicators. If one or more survey items in a data collection instrument were judged to be a close match to an NCEO outcome indicator, the data collection program was classified as providing potential indicators for that outcome in the NCEO Conceptual Model. Two individuals completed this review process for each data collection program.

As is often the case, the variables and indicators of concepts included in data collection programs typically do not provide an exact match to the indicators needed for secondary analysis (McGrew et al., 1992). Given that secondary analysts must often use less than perfect "surrogate" measures that were originally developed for different purposes, conceptually similar or approximate indicators were considered to be a "match" with an NCEO outcome, when so judged by group consensus. Discrepancies between the reviewers were resolved by group consensus, and/or by review by a third individual. The following examples provide an illustration of the reasoning used in the model-indicator mapping process.

The NCEO Physical Health domain (Figure 4) includes the outcome of "Makes Healthy Lifestyle Choices." One of the indicators of this outcome is "Percent of students who indicate that they use tobacco products." The Youth Risk Behavior Surveillance Survey (YRBS) includes three items that closely match the intent of this NCEO outcome indicator. The three YRBS survey

Figure 1

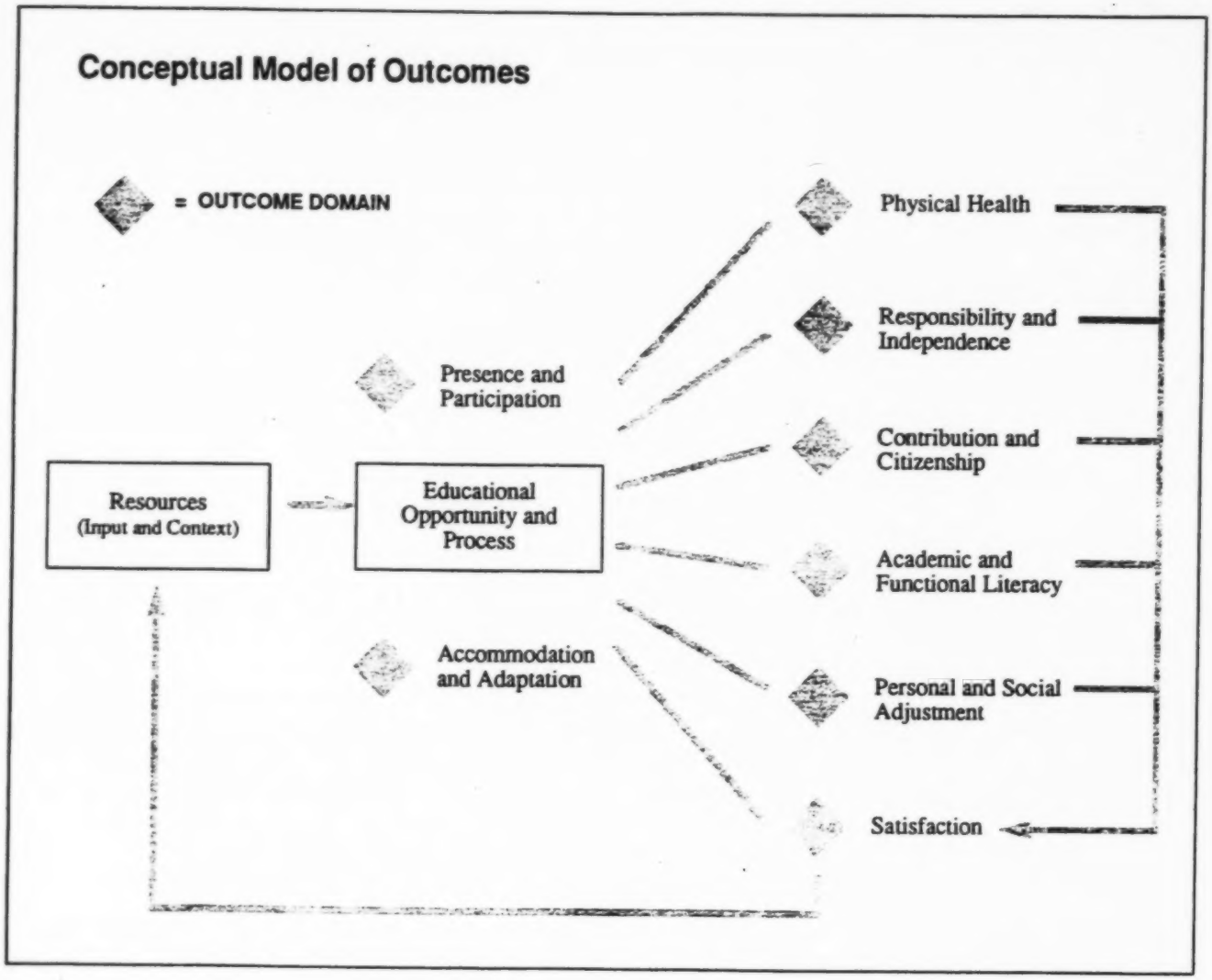
Conceptual Model of Outcomes
= OUTCOME DOMAIN
Resources
(Input and Context)
Educational
Opportunity and
Process
Presence and
Participation
Accommodation
and Adaptation
Physical Health
Responsibility and
Independence
Contribution and
Citizenship
Academic and
Functional Literacy
Personal and Social
Adjustment
Satisfaction

Figure 2

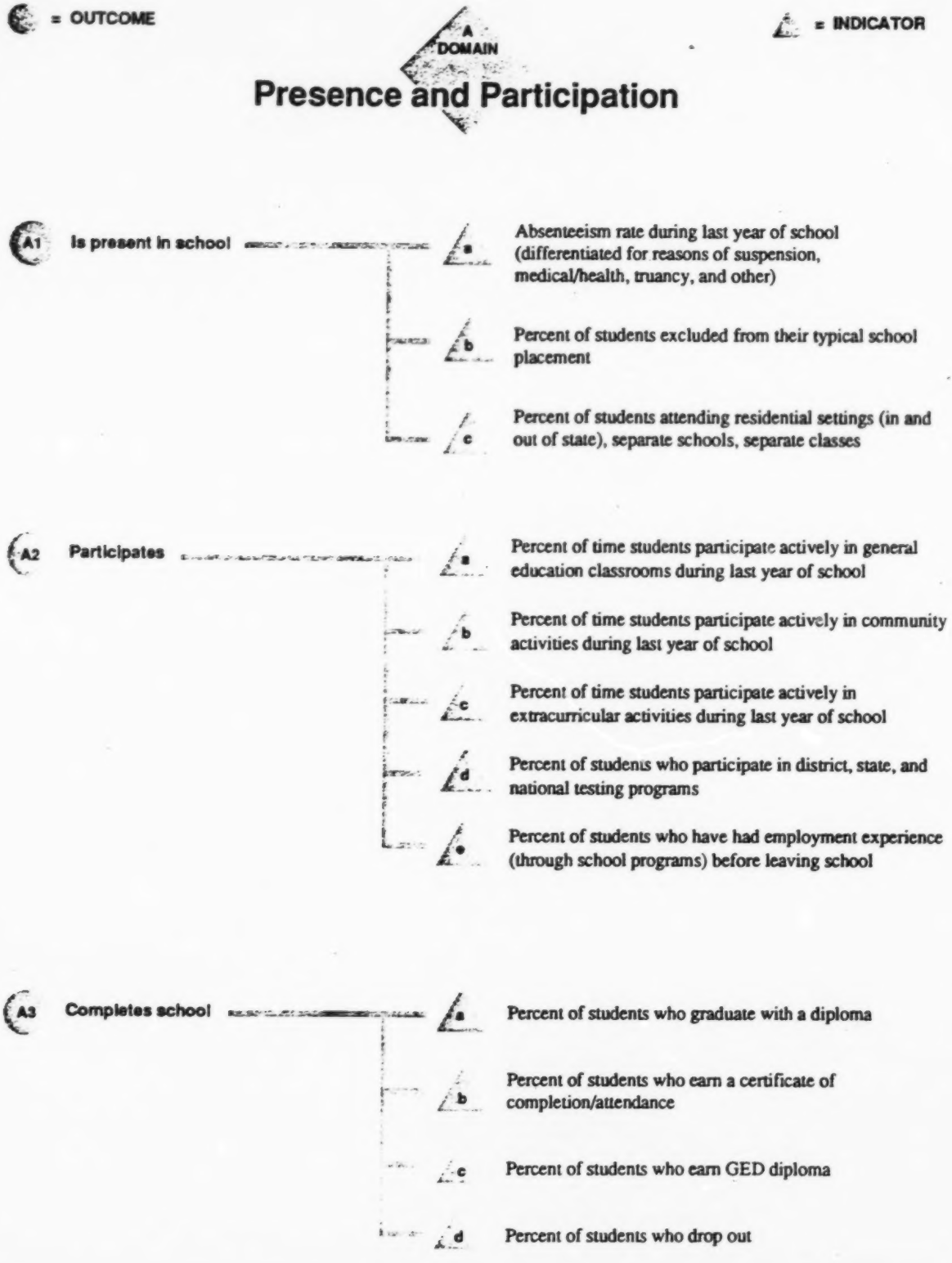
= OUTCOME
= INDICATOR
A
DOMAIN
Presence and Participation
A1
Is present in school
a
Absenteeism rate during last year of school (differentiated for reasons of suspension, medical/health, truancy, and other)
b
Percent of students excluded from their typical school placement
c
Percent of students attending residential settings (in and out of state), separate schools, separate classes
A2
Participates
a
Percent of time students participate actively in general education classrooms during last year of school
b
Percent of time students participate actively in community activities during last year of school
c
Percent of time students participate actively in extracurricular activities during last year of school
d
Percent of students who participate in district, state, and national testing programs
e
Percent of students who have had employment experience (through school programs) before leaving school
A3
Completes school
a
Percent of students who graduate with a diploma
b
Percent of students who earn a certificate of completion/attendance
c
Percent of students who earn GED diploma
d
Percent of students who drop out

Figure 3

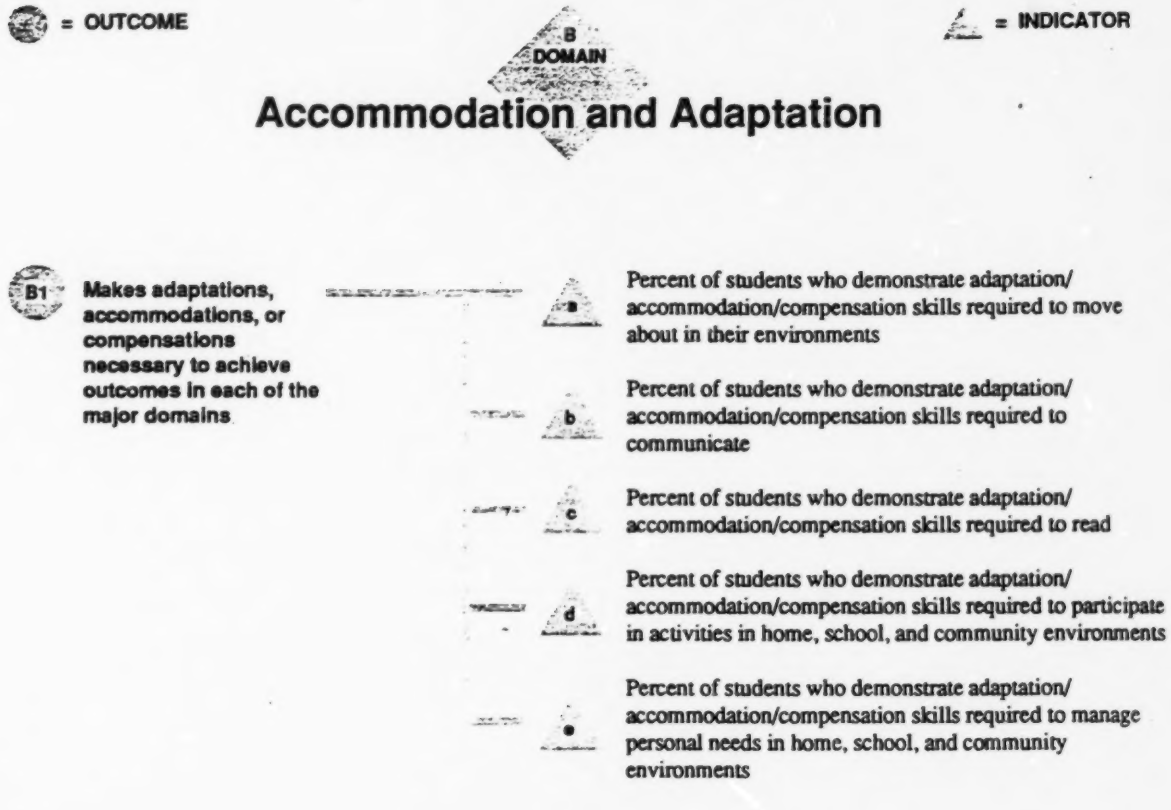
= OUTCOME
= INDICATOR
B
DOMAIN
Accommodation and Adaptation
B1
Makes adaptations, accommodations, or compensations necessary to achieve outcomes in each of the major domains
a
Percent of students who demonstrate adaptation/ accommodation/compensation skills required to move about in their environments
b
Percent of students who demonstrate adaptation/ accommodation/compensation skills required to communicate
c
Percent of students who demonstrate adaptation/ accommodation/compensation skills required to read
d
Percent of students who demonstrate adaptation/ accommodation/compensation skills required to participate in activities in home, school, and community environments
e
Percent of students who demonstrate adaptation/ accommodation/compensation skills required to manage personal needs in home, school, and community environments
B2
Demonstrates family support and coping skills
a
Percent of families prepared to cope with student's needs after student leaves school
b
Percent of families knowledgeable about community resources and programs needed by student
c
Percent of families participating in the education of their children

Figure 4

C1 Makes healthy lifestyle choices

- a — Percent of students who indicate that they use tobacco products
- b — Percent of students who make good nutritional choices
- c — Percent of students who have abused alcohol or drugs in the past year
- d — Percent of students who indicate they have had unprotected sex in the past year
- e — Percent of students who elect to participate in sports, recreational, and/or exercise activities

C2 Is aware of basic safety, fitness, and health care needs

- a — Percent of students who are aware of basic safety precautions and procedures
- b — Percent of students who are aware of basic fitness needs
- c — Percent of students who are aware of basic health care needs
- d — Percent of students who know when, where, and how to access health care

C3 Is physically fit

- a — Percent of students who are physically fit

Figure 5

D1 Gets about in the environment

- a — Percent of students who can get to and from a variety of destinations
- b — Percent of students who know how to access community services (e.g., rehabilitation, counseling, employment, health, etc.)
- c — Percent of students who complete transactions (shopping, banking, dry cleaning, etc.) in the community
- d — Percent of students with a d river's license

D2 Is responsible for self

- a — Percent of students who can prioritize and set goals and persevere toward them
- b — Percent of students who manage personal care and safety
- c — Percent of students who effectively advocate for themselves
- d — Percent of students who are likely to engage in lifelong learning

Figure 6

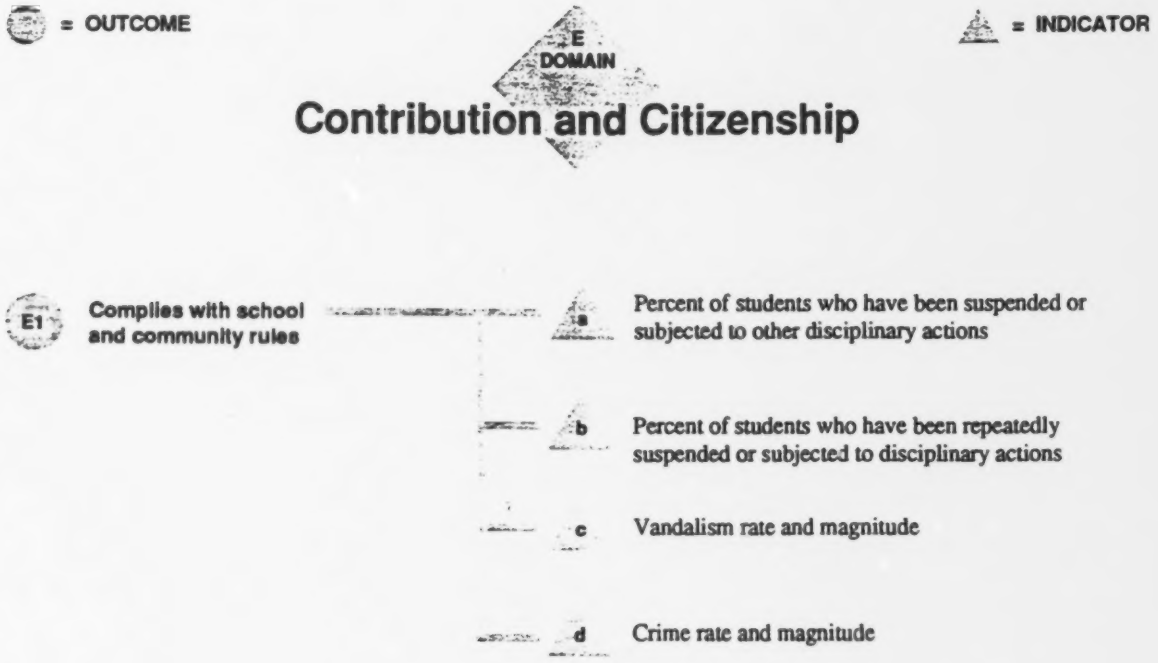
= OUTCOME
= INDICATOR
E
DOMAIN
Contribution and Citizenship
E1
Complies with school and community rules
a
Percent of students who have been suspended or subjected to other disciplinary actions
b
Percent of students who have been repeatedly suspended or subjected to disciplinary actions
c
Vandalism rate and magnitude
d
Crime rate and magnitude
E2
Knows the significance of voting and procedures necessary to register and vote
a
Percent of students who know the significance of voting
b
Percent of students who know the procedures necessary to register and vote
E3
Volunteers
a
Percent of students who volunteer time to school, civic, community, or nonprofit activities

Figure 7

F1 Demonstrates competence in communication	a	Percent of students who use and comprehend language that effectively accomplishes the purpose of the communication
F2 Demonstrates competence in problem-solving strategies and critical thinking skills	a	Percent of students who demonstrate problem-solving and critical thinking skills
F3 Demonstrates competence in math, reading and writing skills	a	Percent of students who demonstrate competence in math necessary to function in their current home, school, work, and community environments
	b	Percent of students who demonstrate competence in math necessary to function in their next environment
	c	Percent of students who demonstrate competence in reading necessary to function in their current home, school, work, and community environments
	d	Percent of students who demonstrate competence in reading necessary to function in their next environment
	e	Percent of students who demonstrate competence in writing necessary to function in their current home, school, work, and community environments
	f	Percent of students who demonstrate competence in writing necessary to function in their next environment
F4 Demonstrates competence in other academic and nonacademic skills	a	Percent of students who demonstrate competence in other academic and nonacademic skills necessary to function in their current home, school, work, and community environments
	b	Percent of students who demonstrate competence in other academic and nonacademic skills necessary to function in their next environment
F5 Demonstrates competence in using technology	a	Percent of students who currently apply technology to enhance functioning in home, school, work, and community environments
	e	Percent of students who demonstrate competence in using technology to function in their next environment

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Figure 8

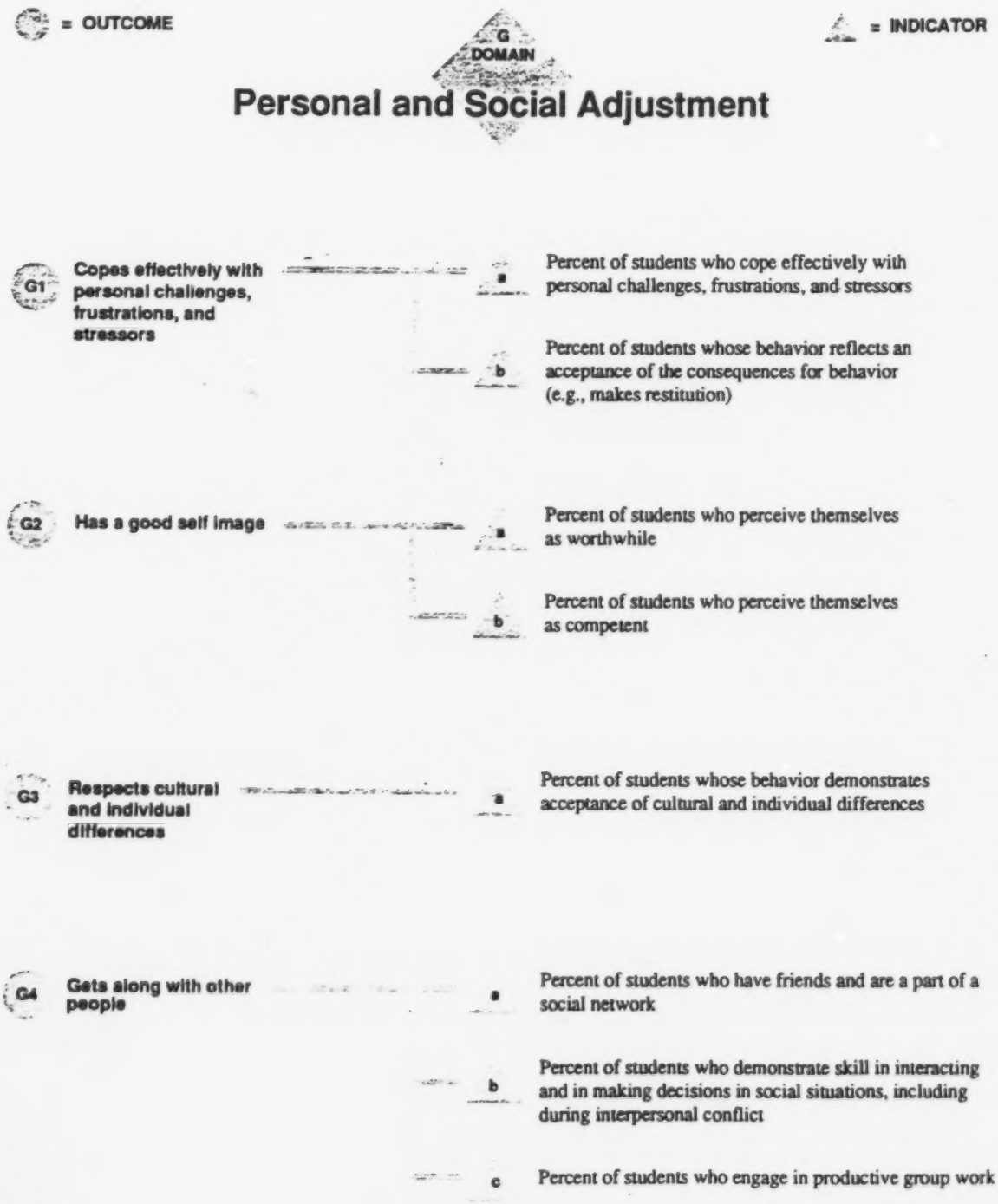
= OUTCOME
G DOMAIN
= INDICATOR
Personal and Social Adjustment
G1
Copes effectively with personal challenges, frustrations, and stressors
a
Percent of students who cope effectively with personal challenges, frustrations, and stressors
b
Percent of students whose behavior reflects an acceptance of the consequences for behavior (e.g., makes restitution)
G2
Has a good self image
a
Percent of students who perceive themselves as worthwhile
b
Percent of students who perceive themselves as competent
G3
Respects cultural and individual differences
a
Percent of students whose behavior demonstrates acceptance of cultural and individual differences
G4
Gets along with other people
a
Percent of students who have friends and are a part of a social network
b
Percent of students who demonstrate skill in interacting and in making decisions in social situations, including during interpersonal conflict
c
Percent of students who engage in productive group work

Figure 9

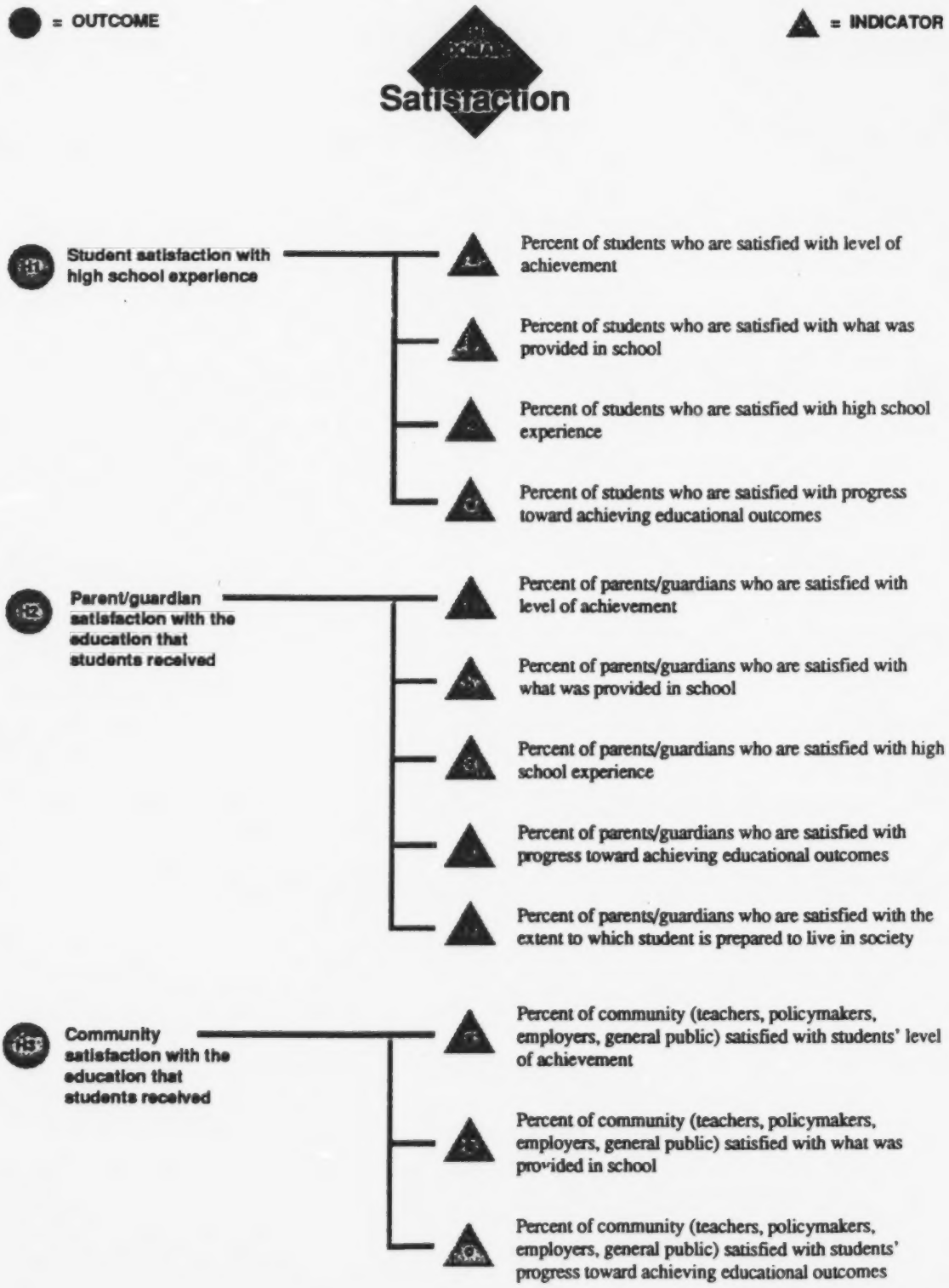
= OUTCOME
= INDICATOR
Satisfaction
Student satisfaction with high school experience
Percent of students who are satisfied with level of achievement
Percent of students who are satisfied with what was provided in school
Percent of students who are satisfied with high school experience
Percent of students who are satisfied with progress toward achieving educational outcomes
Parent/guardian satisfaction with the education that students received
Percent of parents/guardians who are satisfied with level of achievement
Percent of parents/guardians who are satisfied with what was provided in school
Percent of parents/guardians who are satisfied with high school experience
Percent of parents/guardians who are satisfied with progress toward achieving educational outcomes
Percent of parents/guardians who are satisfied with the extent to which student is prepared to live in society
Community satisfaction with the education that students received
Percent of community (teachers, policymakers, employers, general public) satisfied with students' level of achievement
Percent of community (teachers, policymakers, employers, general public) satisfied with what was provided in school
Percent of community (teachers, policymakers, employers, general public) satisfied with students' progress toward achieving educational outcomes

Table 1
Descriptions of National Data Collection Programs Included in Investigation

National Longitudinal Transition Study of Special Education Students (Department of Education) - NLTS:87

A nationally representative longitudinal study of special education students who where in grades 7-12 during the 1987 base year sample. By collecting a wide array of information from parents/guardians, school records, and school administrators, this data collection program provides descriptive information regarding the transition of youth with disabilities from secondary school to early adulthood, and seeks to identify factors that contribute to effective transition of youth with disabilities. The first follow-up was completed in 1990.

National Assessment of Educational Progress
(Department of Education) - NAEP:88

NAEP is a nationally representative cross-sectional study designed to monitor the knowledge, skills, understanding, and attitudes of the nation's children and youth. This data collection program began in 1969 and currently assesses different curriculum areas (e.g., reading, writing, mathematics, science, citizenship, U. S. History, geography, social studies, art, music, literature, career and occupational development) in grades 4, 8, and 12 every two years.

National Education Longitudinal Study of 1992
(Department of Education) - NELS:92

A nationally representative longitudinal study designed to assess the baseline experiences of 8th grade students and to relate these experiences to current academic achievement and to later achievement in school and life. The base year data collection program started in 1988 and the first and second followups were in 1990 and 1992.

National Adult Literacy Survey
(Department of Education) - NALS:92

A nationally representative cross-sectional study designed to collect information on the types and levels of literacy skills of adults and how these skills are distributed across major subgroups. This study assessed the prose, document, and quantitative literacy of young adults in 1992.

National Household Education Survey
(Department of Education) - NHES:91

A nationally representative cross-sectional sample of households were surveyed in 1991 to provide national data regarding early and adult education issues. The 1991 base year survey targets information on the care and education of 3-to-8 year old children, and the participation of adults in education activities.

1900 High School Transcript Study
(Department of Education) - HSTS:90

A nationally representative cross-sectional sample of 12th grade students selected from the 1990 NAEP survey. The study provided information on the course-taking patterns of 12th grade students.

National Health Interview Survey
(Department of Health and Human Services) - NHIS:89

A nationally representative cross-sectional study designed to provide information on the health of the civilian noninstitutionalized U.S. population (birth through adulthood). This survey has been completed annually since 1957. While the same basic demographic and health-related information is collected each year, additional information on special health topics (e.g., AIDs, aging, etc.) may be covered in any one survey.

National Survey of Family Growth
(Department of Health and Human Services) - NSFG:88

A nationally representative cross-sectional sample drawn from households involved in the National Health Interview Survey (NHIS). The 1988 cycle included women from 15-44 years of age who where included in the 1986 NHIS. The study provides national data on the demographic and social factors associated with childbearing, contraception, adoptions, and maternal and child health.

Youth Risk Behavior Survey
(Department of Health and Human Services) - YRBS:93

A nationally representative cross-sectional sample of students in grades 9-12. As part of the Youth Risk Behavior Surveillance System (YRBSS), this study is designed to periodically (every two years) measure the prevalence of priority health-risk behaviors among the nation's youth, and to assess whether these behaviors change over time.

National Crime Survey
(Department of Justice) - NCS:86-89

A nationally representative cross-sectional sample (collected on a three year cycle) of household members from age 12 and above. The study is designed to collect data on personal and household crime victimization.

Current Population Survey, March Supplement
(Department of Commerce) - CPS

A nationally representative cross-sectional study designed to collect information on the employment situation and demographic status of the complete U. S. population (birth through adulthood). The March Supplement is specifically designed to gather data on work experience, income, noncash benefits, and population migration. Data collection in this program has been occurring annually since the 1940's.

National Household Survey on Drug Abuse
(Department of Health and Human Services) - NHSDA:93

A nationally representative cross-sectional study designed to collect information on the use of tobacco, alcohol, illicit drugs, and nonmedical use of prescription drugs. Data collection in this program has been occurring on a biennial basis since 1971.

Monitoring the Future
(Department of Health and Human Services) - MF:93

A nationally representative longitudinal study designed to collect information on drug use and attitudes about drugs, views about personal lifestyles, confidence in social institutions, intergroup and interpersonal attitudes, concerns about conservation and ecology, and other social and ethical issues. High school seniors have been the base year sample for this annual survey since 1975. Followup surveys are conducted annually for each class for up to fourteen years.

questions are: "During the past 30 days, on how many days did you smoke cigarettes?"; "During the past 30 days, did you use chewing tobacco, such as Redman, Levi Garrett, or Beechnut, or snuff, such as Skoal, Skoal Bandits, or Copenhagen?"; and "During the past 30 days, on the days you smoked, how many cigarettes did you smoke per day?" Few would argue that these three survey questions could be used as items to estimate the percent of students who use tobacco products.

An example of a more difficult mapping judgment can also be found for YRBS in the NCEO outcome domain of Physical Health. As listed in Figure 4, the NCEO Physical Health outcome domain includes the outcome "Is Physically Fit," with the indicator "Percent of students who are physically fit." YRBS includes a series of questions that inquire about a student's physical activity, including self-report of how often the individual exercises, walks or bicycles for at least 30 minutes at a time, and frequency and time involvement in physical education classes. Although these and other YRBS items focus on participation in physical activities, activities that can contribute to good physical fitness, one cannot infer or guarantee "fitness" from participation alone. Thus, YRBS was judged not to include reasonably good indicators that approximate the NCEO outcome of "Is physically fit." When difficult model-indictor mapping decisions were necessary, the final criterion used to make judgments was whether the NCEO staff would feel comfortable in using the variables as proxies for the NCEO outcome indicators in secondary data analysis.

Method

The results of the mapping process are presented by NCEO School Completion outcome domains in Tables 2 through 9.

In the NCEO domain of Presence and Participation, each of the 12 NCEO indicators is present in at least one of the data collection programs reviewed (see Table 2). Most indicators were available in several data bases, from both educational and noneducational data collection programs. Given that the areas of school attendance and completion have been the focus of much previous research, it is not surprising that four Presence and Participation indicators were measured by four data collection programs. These indicators were "absenteeism rate" (A1a), "percent of students graduating with a diploma" (A3a), "percent of students earning a GED" (A3c), and "percent of students who drop out" (A3d). The least represented indicators were "percent of time students participate actively in general education classrooms during last school year" (A2a) and "percent of students who participate in district, state, and national testing programs" (A2d). An indicator specifically focused on students in special education (i.e, A2a; percent of time students participate actively in general education classrooms) was available only in NLTS:87.

Only two of the data collection programs had items that matched any of the NCEO Accomodation and Adaptation indicators (see Table 3). While all eight indicators were available in this domain, NLTS:87 exclusively provided most of these measures. In the outcome area of "makes adaptations, accommodations, or compensations necessary to achieve outcomes in each of the major domains" (B1), only NLTS:87 contained any indicators. The outcome areas regarding family support and coping skills (B2) only had indicators available in NELS:92 and NLTS:87.

Nine of the ten NCEO Physical Health indicators (90%) had measures available (see Table 4). Two indicators each had measures in five different data collection programs. These were "percent of students who indicate they use tobacco products" (C1a) and "percent of students who have abused alcohol or drugs in the past year" (C1c). Multiple coverage of these "negative" indicators is contrasted with less coverage of "positive" indicators. The indicator of "percent of students who know when, where, and how to access health care" (C2d) was not addressed in any of the data bases. Most of the data collection programs that included indicators were sponsored by the Department of Health and Human Services (NHIS:89, YRBS:93, NHSDA:93, MF:93), with

YRBS:93 and MF:93 presenting the most extensive coverage.
Seven of eight indicators (88%) in the domain of Responsibility and Independence were present in the reviewed data bases (see Table 5). No measure of "percent of students who effectively advocate for themselves" (D2c) was found in the data collection programs. Most indicators were covered by only one or two data bases, and no single data collection program covered more than 50% of the indicators. Indicators for "percent of students who know how to access community services" (D1b) were only available for females in NSFG:88.

In the domain of Contribution and Citizenship, all seven indicators had measures available (see Table 6). In the outcome areas of "compliance with school and community rules" (E1) and "volunteerism" (E3), indicators were available in multiple data bases. In particular, "crime rate and magnitude" (E1d) and "percent of students who volunteer time to school, community, or nonprofit activities" (E3a) had measures in four to five data bases. The outcome domain of "knows significance of voting and procedures necessary to register and vote" (E2) was least represented in the data collection programs. The NELS:92 and MF:93 data collection programs provided measures on most indicators in the Contribution and Citizenship domain.

As would be expected, in the domain of Academic and Functional Literacy the data collection programs of the Department of Education (NLTS:87, NAEP, NELS:92, NALS:92, NHES:91; HSTS:90) provided measures for all indicators, while noneducational programs provided no measures (see Table 7). Indicators were available in multiple data collection programs in the traditional school subjects of reading, writing, and mathematics (F3). The outcome areas of competence in communication (F1), problem solving and critical thinking skills (F2), and academic and nonacademic skills (F4) had less coverage. In the outcome area of competence in using technology (F5), only NLTS:87 included indicators.

In the domain of Personal and Social Adjustment, seven of the eight indicators (88%) had measures available (see Table 8). No measure for "percent of students whose behavior reflects an acceptance of the consequences for behavior (e.g., makes restitution)" (G1b) was present in the data collection programs. Most indicators had measures in only one or two data bases, with most coverage coming from NELS:92 and MF:93.

Satisfaction (see Table 9) had the least coverage of all the NCEO domains. Eight of twelve (67%) NCEO indicators were found across data collection programs. Only two data bases, NELS:92 and MF:93, had measures in this domain. No measures were available for indicators of satisfaction with students level of achievement (H1a, H2s, H3a) or "percent of community (teachers, policy makers, employers, general public) satisfied with students' progress toward achieving educational outcomes" (H3c).

Table 10 presents a summary of the availability of NCEO School Completion outcome indicators across data collection programs. Overall, the coverage is high, with 91% of the NCEO indicators having a measure in at least one of the 13 data collection programs reviewed. When the NLTS data collection program (the only program specifically focused on individuals with disabilities) is excluded from the table, this percentage drops to 81%. Most of this difference occurs in the domain of Accommodation and Adaptation; when NLTS is included, 100% of the indicators in this domain are present, when NLTS is excluded, only 38%. By itself, NLTS covers 48% of all 77 NCEO indicators. This figure is surpassed only by NELS:92, which covers 53% of all NCEO indicators. While the overall percentage of indicators present is high, this figure represents the combination of 13 major national data collection programs. Over one-third of all the indicators had just one measure across all data bases; 33% had two or three measures, and 22% had four or more. Nine percent had no measures available.

The data base/indicator ratios presented in Table 10 indicate that the breadth of coverage

Table 2. Mapping of NCEO School Completion Level **Presence and Participation** Outcomes and Indicators with Select National Data Collection Programs

	Data Collection Programs*												
Outcomes/Indicators	NLTS: 87	NAEP	NELS: 92	NALS: 92	NHES: 91	HSTS: 90	NHIS: 89	NSFG: 88	YRBS: 93	NCS: 86-89	CPS	NHSDA: 93	MF: 93
A1. Is present in school													
(a) Absenteeism rate during last year of school	X	X	X			X	X					X	
(b) Percent of students excluded from their typical school placement	X	X				X							
(c) Percent of students attending residential settings, separate schools, separate classes	X	X				X	X						
A2. Participates													
(a) Percent of time students participate actively in general education classrooms during last year of school	X												
(b) Percent of time students participate actively in community activities during last year of school	X		X						X				X
(c) Percent of time students participate actively in extracurricular activities during last year of school	X		X										X
(d) Percent of students who participate in district, state, and national testing programs	X		X										
(e) Percent of students who have had employment experience before leaving school	X											X	X
A3. Completes School													
(a) Percent of students who graduate with a diploma	X		X	X	X	X		O				X	
(b) Percent of students who earn a certificate of completion/attendance	X		X		X	X							
(c) Percent of students who earn a GED diploma			X	X	X			O				X	
(d) Percent of students who drop out	X		X	X				O				X	

* NLTS:87 = National Longitudinal Transition Study of Special Education Students, 1987
NAEP = National Assessment of Educational Progress
NELS:92 = National Education Longitudinal Study of 1988, Second Follow-up of 1992
NALS:92 = National Adult Literacy Survey (1992)
NHES:91 = National Household Education Survey (1991)
HSTS:90 = High School Transcript Study (1990)
NHIS:88 = National Helath Interview Survey (1988)
NSFG:88 = National Survey of Family Growth (1988)
YRBS:93 = Youth Risk Behavior Survey (1993)
NCS:86-89 = National Crime Survey (1986-89)
CPS = Current Population Survey
NHSDA:93 = National Household Survey of Drug Abuse (1993)
MF:93 = Monitoring the Future (1993)

Note: "X" indicates data base includes a possible indicator.
"O" indicates data base includes a possible indicator for females only.

Table 3. Mapping of NCEO School Completion Level **Accommodation and Adaptation** Outcomes and Indicators with Select National Data Collection Programs

Outcomes/Indicators	Data Collection Programs*												
	NLTS: 87	NAEP	NELS: 92	NALS: 92	NHES: 91	HSTS: 90	NHIS: 89	NSFG: 88	YRBS: 93	NCS: 86-89	CPS	NHSDA: 93	MF: 93
B1. Makes adaptations, accommodations, or compensations necessary to achieve outcomes in each of the major domains													
(a) Percent of students who demonstrate adaptation/accommodation/ compensation required to move about in their environments	X												
(b) Percent of students who demonstrate adaptation/accommodation/ compensation skills required to communicate	X												
(c) Percent of students who demonstrate adaptation/accommodation/ compensation skills required to read	X												
(d) Percent of students who demonstrate adaptation/accommodation/ compensation skills required to participate in activities in home, school, and community environments	X												
(e) Percent of students who demonstrate adaptation/accommodation/ compensation skills required to manage personal needs in home, school, and community environments	X												
B2. Demonstrates family support and coping skills													
(a) Percent of families prepared to cope with student's needs after student leaves school			X										
(b) Percent of families knowledgeable about community resources and programs needed by student			X										
(c) Percent of families participating in the education of their children	X		X										

Note. "X" indicates data base includes a possible indicator.

* See Table 2 for identification of data collection program.

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Table 4. Mapping of NCEO School Completion Level **Physical Health** Outcomes and Indicators with Select National Data Collection Programs

	Data Collection Programs*												
Outcomes/Indicators	NLTS: 87	NAEP	NELS: 92	NALS: 92	NHES: 91	HSTS: 90	NHIS: 89	NSFG: 88	YRBS: 93	NCS: 86-89	CPS	NHSDA: 93	MF:93
C1. Makes healthy lifestyle choices													
(a) Percent of students who indicate that they use tobacco products			X				X		X			X	X
(b) Percent of students who make good nutritional choices									X				X
(c) Percent of students who have abused alcohol or drugs in the past year			X				X		X			X	X
(d) Percent of students who indicate they have had unprotected sex in the past year									X				
(e) Percent of students who elect to participate in sports, recreation, and/or exercise activities	X		X						X				X
C2. Is aware of basic safety, fitness, and health care needs													
(a) Percent of students who are aware of basic safety precautions and procedures	X								X				X
(b) Percent of students who are aware of basic fitness needs													X
(c) Percent of students who are aware of basic health care needs													X
(d) Percent of students who know when, where, and how to access health care													
C3. Is physically fit													
(a) Percent of students who are physically fit							X					X	X

Note. "X" indicates data base includes a possible indicator.

*See Table 2 for identification of data collection programs.

Table 5. Mapping of NCEO School Completion Level **Responsibility and Independence** Outcomes and Indicators with Select National Data Collection Programs

	Data Collection Programs*												
Outcomes/Indicators	NLTS: 87	NAEP	NELS: 92	NALS: 92	NHES: 91	HSTS: 90	NHIS: 89	NSFG: 88	YRBS: 93	NCS: 86-89	CPS	NHSDA: 93	MF: 93
D1. Gets about in the environment													
(a) Percent of students who can get to and from a variety of destinations	X						X						
(b) Percent of students who know how to access community services (e.g., rehabilitation, counseling, employment, health, etc.)								O					
(c) Percent of students who complete transactions (shopping, banking, dry-cleaning, etc.) in the community	X						X						
(d) Percent of students with a driver's license													X
D2. Is responsible for self													
(a) Percent of students who can prioritize and set goals and persevere toward them			X										
(b) Percent of students who manage personal care and safety	X						X	O	X				
(c) Percent of students who effectively advocate for themselves													
(d) Percent of students who are likely to engage in lifelong learning	X			X	X								

Note. "X" indicates data base includes a possible indicator.
"O" indicates data base includes a possible indicator for females only.

*See Table 2 for identification of data collection programs.

Table 6. Mapping of NCEO School Completion Level **Contribution and Citizenship** Outcomes and Indicators with Select National Data Collection Programs

	Data Collection Programs*												
Outcomes/Indicators	NLTS: 87	NAEP	NELS: 92	NALS: 92	NHES: 91	HSTS: 90	NHIS: 89	NSFG: 88	YRBS: 93	NCS: 86-89	CPS	NHSDA: 93	MF:93
E1. Complies with school and community rules													
(a) Percent of students who have been suspended or subjected to other disciplinary actions	X		X										X
(b) Percent of students who have been repeatedly suspended or subjected to disciplinary actions	X		X										X
(c) Vandalism rate and magnitude			X									X	X
(d) Crime rate and magnitude	X		X						X			X	X
E2. Knows the significance of voting and procedures necessary to register and vote													
(a) Percent of students who know the significance of voting													X
(b) Percent of students who know the procedures necessary to register and vote				X									
E3. Volunteers													
(a) Percent of students who volunteer time to school, community, or nonprofit activities	X		X	X									X

Note. "X" indicates data base includes a possible indicator.

*See Table 2 for identification of data collection programs.

Table 7. Mapping of NCEO School Completion Level **Academic and Functional Literacy** Outcomes and Indicators with Select National Data Collection Programs;

	Data Collection Programs*												
Outcomes/Indicators	NLTS: 87	NAEP	NELS: 92	NALS: 92	NHES: 91	HSTS: 90	NHIS: 89	NSFG: 88	YRBS: 93	NCS: 86-89	CPS	NHSDA: 93	MF: 93
F1. Demonstrates competence in communication													
(a) Percent of students who use and comprehend language that effectively accomplishes the purpose of the communication		X	X	X									
F2. Demonstrates competence in problem-solving strategies and critical thinking skills													
(a) Percent of students who demonstrate competence in problem-solving strategies and critical thinking skills		X	X										
F3. Demonstrates competence in math, reading and writing skills													
(a) Percent of students who demonstrate competence in math necessary to function in their current home, school, work, and community environments	X	X	X	X		X							
(b) Percent of students who demonstrate competence in math necessary to function in their next environment	X	X	X	X		X							
(c) Percent of students who demonstrate competence in reading necessary to function in their current home, school, work, and community environments	X	X	X	X		X							
(d) Percent of students who demonstrate competence in reading necessary to function in their next environment	X	X	X	X		X							
(e) Percent of students who demonstrate competence in writing necessary to function in their current home, school, work, and community environments	X	X	X	X		X							

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Table 7. (continued)

Outcomes/Indicators	Data Collection Programs*												
	NLTS: 87	NAEP	NELS: 92	NALS: 92	NHES: 91	HSTS: 90	NHIS: 89	NSFG: 88	YRBS: 93	NCS: 86-89	CPS	NHSDA: 93	MF: 93
(f) Percent of students who demonstrate competence in writing necessary to function in their next environment	X	X	X	X		X							
F4. Demonstrates competence in other academic and nonacademic skills													
(a) Percent of students who demonstrate competence in other academic and nonacademic skills necessary to function in their current home, school, work, and community environments		X	X										
(b) Percent of students who demonstrate competence in other academic and nonacademic skills necessary to function in their next environments		X	X										
F5. Demonstrates competence in using technology													
(a) Percent of students who currently apply technology to enhance functioning in home, school, work, and community environments	X												
(b) Percent of students who demonstrate competence in using technology to function in their next environment	X												

Note. "X" indicates data base includes a possible indicator.

*See Table 2 for identification of data collection programs.

Table 8. Mapping of NCEO School Completion Level **Personal and Social Adjustment** Outcomes and Indicators with Select National Data Collection Programs

	Data Collection Programs*												
Outcomes/Indicators	NLTS: 87	NAEP	NELS: 92	NALS: 92	NHES: 91	HSTS: 90	NHIS: 89	NSFG: 88	YRBS: 93	NCS: 86-89	CPS	NHSDA: 93	MF: 93
G1. Copes effectively with personal challenges, frustrations, and stressors													
(a) Percent of students who cope effectively with personal challenges, frustrations, and stressors									X				
(b) Percent of students whose behavior reflects an acceptance of the consequences for behavior (e.g., makes restitution)													
G2. Has a good self image													
(a) Percent of students who perceive themselves as worthwhile			X										X
(b) Percent of students who perceive themselves as competent		X	X										X
G3. Respects cultural and individual differences													
(a) Percent of students whose behavior demonstrates acceptance of cultural and individual differences													X
G4. Gets along with other people													
(a) Percent of students who have friends and are a part of a social network	X		X										X
(b) Percent of students who demonstrate skill in interacting and in making decisions in social situations, including during interpersonal conflict			X										
(c) Percent of students who engage in productive group work	X		X										

Note. "X" indicates data base includes a possible indicator.

*See Table 2 for identification of data collection programs.

Table 9. Mapping of NCEO School Completion Level **Satisfaction** Outcomes and Indicators with Select National Data Collection Programs

Outcomes/Indicators	Data Collection Programs*												
	NLTS: 87	NAEP	NELS: 92	NALS: 92	NHES: 91	HSTS: 90	NHIS: 89	NSFG: 88	YRBS: 93	NCS: 86-89	CPS	NHSDA: 93	MF: 93
H1. Students satisfaction with high school experience													
(a) Percent of students who are satisfied with level of achievement													
(b) Percent of students who are satisfied with what was provided in school													X
(c) Percent of students who are satisfied with high school experience			X										X
(d) Percent of students who are satisfied with progress toward achieving education outcomes													X
H2. Parent/guardian satisfaction with the education that students received													
(a) Percent of parents/guardians who are satisfied with level of achievement													
(b) Percent of parents/guardians who are satisfied with what was provided in school			X										
(c) Percent of parents/guardians who are satisfied with high school experience			X										
(d) Percent of parents/guardians who are satisfied with progress toward achieving educational outcomes			X										
(e) Percent of parents/guardians who are satisfied with the extent to which student is prepared to live in society			X										
H3. Community satisfaction with the education that students received													
(a) Percent of community (teachers, policy makers, employers, general public) satisfied with students' level of achievement													

Table 9. (continued)

Outcomes/Indicators	Data Collection Programs*												
	NLTS: 87	NAEP	NELS: 92	NALS: 92	NHES: 91	HSTS: 90	NHIS: 89	NSFG: 88	YRBS: 93	NCS: 86-89	CPS	NHSDA: 93	MF: 93
(b) Percent of community (teachers, policy makers, employers, general public) satisfied with what was provided in school			X										
(c) Percent of community (teachers, policy makers, employers, general public) satisfied with students' progress toward achieving educational outcomes													

Note. "X" indicates data base includes a possible indicator.

*See Table 2 for identification of data collection programs.

Table 10. Availability of NCEO School Completion Level Outcome Indicators in Select National Data Collection Programs

NCEO Outcome Domains	Number of indicators in domain	Number of indicators for which data may be available in reviewed data bases [1]	Percent of indicators for which data may be available in reviewed data bases[1]	Data base to indicator ratio[2]
A. Presence and Participation	12	12	100%	3.9
B. Accommodation and Adaptation	8	8	100%	1.1
C. Physical Health	10	9	90%	2.5
D. Responsibility and Independence	8	7	88%	1.8
E. Contribution and Citizenship	7	7	100%	2.8
F. Academic and Functional Literacy	12	12	100%	3.4
G. Personal and Social Adjustment	8	7	88%	1.6
H. Satisfaction	12	8	67%	0.8
All NCEO Outcome Domains	77	70	91%	2.6

[1]The data bases that were reviewed are the National Longitudinal Transition Study of Special Education Students, 1987 (NLTS); National Assessment of Educational Progress (NAEP); National Education Longitudinal Study of 1988 (NELS:88); National Adult Literacy Survey, 1992 (NALS); National Household Education Survey, 1991 (adult) (NHES); High School Transcript Study, 1990 (HSTS); National Survey of Family Growth (NSFG); Youth Risk Behavior Survey, 1990-91 (YRBS); National Crime Survey, 1986-89 (NCS); and Current Population Survey (CPS); National Household Survey of Drug Abuse, 1993 (NHSDA); Monitoring the Future, 1993 (MF).

[2]This number represents the average number of data collection programs with measures for each indicator in an outcome domain. Thus, for example, there are an average of 3.9 data collection programs with measures of indicators in the Presence and Participation domain.

(average number of data collection programs per indicator) is the greatest in the NCEO outcome domains of Presence and Participation (3.9), Academic and Functional Literacy (3.4), Contribution and Citizenship (2.8), and Physical Health (2.5). The outcome domains of Responsibility and Independence (1.8), Personal and Social Adjustment (1.6), Accommodation and Adaptation (1.1), and Satisfaction (0.8) are not as well represented.

Discussion

Indicators of important school completion outcomes for all students are substantially represented in our national data collection system. Across 13 national data collection programs that include individuals at the completion of their secondary schooling, 91% (70 of 77) of the NCEO outcome indicators are represented by at least one measure. When the non-recurring National Longitudinal Transition Study of Special Education Students (NLTS) is excluded, the coverage is approximately 10% less (81% of the NCEO outcome indicators are represented). Approximately half of all the NCEO indicators are present in two or more of the 13 data collection programs. With approximately 80% of the NCEO school completion outcome indicators present in our recurring national data collection system, the potential exists for producing comprehensive and conceptually organized policy reports regarding the status of all students as they complete school.

As would be expected given the different purposes of data collection programs, the availability of measures that approximate the NCEO indicators varies widely. The NLTS:87 and NELS:92 data collection programs are the most promising data sets for providing information regarding the NCEO outcome domains. These two data collection programs each include measures that are conceptually similar to approximately half of the NCEO school completion outcome indicators. However, analysts who seek to provide information regarding the complete NCEO model will need to draw indicators from most all of the 13 data collection programs reviewed in this study.

The conceptual and technical problems typically encountered when comparing and/or merging information from different data collection programs (McGrew, Spiegel, Thurlow, Ysseldyke, Bruininks, Deno, & Shriner, 1991) will most likely make the final percent of usable NCEO indicators less than the 80% to 90% figures reported in this investigation. Approximately one-third of all the NCEO school completion indicators are only present in one data collection program. Given the certainty that some of these single indicators will be unusable due to the technical and methodological problems encountered in secondary data analysis (McGrew et al., 1991), the final percent of NCEO indicators available for analysis will be under 80%.

The data base/indicator ratios for the different NCEO outcome domains suggest that the potential problem of unusable indicators may be most significant in the areas of Satisfaction (0.8) and Accommodation and Adaptation (1.1), and to a lessor extent Personal and Social Adjustment (1.6) and Responsibility and Independence (1.8). Outcome domains that are likely to still be represented by usable indicators after indicator attrition due to technical problems are Presence and Participation (3.9), Academic and Functional Literacy (3.4), Contribution and Citizenship (2.8), and Physical Health (2.5).

Even if the problems in comparing and combining information from different data bases can be resolved, the ability to extract useful information regarding students with disabilities may be all but impossible. Students with disabilities are often missing from national data collection programs, and if present, they cannot be consistently identified for analysis. An investigation of the exclusion of students with disabilities in national data collection programs found that in educational data sets, 40 % to 50 % of the population of students with disabilities is typically excluded (McGrew, Thurlow, & Spiegel, 1993). In noneducational data collection programs, students with disabilities are included to a greater degree. However, even when present in the samples, individuals with disabilities often cannot be identified with any consistency due to the

lack of disability-specific identifying variables or the use of different disability categories across data collection programs (McGrew, Algozzine, Spiegel, Thurlow, & Ysseldyke, 1993).

In conclusion, the potential exists for producing policy-relevant information on the school completion outcomes of students with disabilities. A significant number (over three-fourths) of outcome indicators in the consensus-based NCEO Conceptual Model of Outcomes (School Completion) are present across 13 national data collection programs. The bad news is that this potential cannot be tapped currently to analyze and generate reports about students with disabilities. The exclusion of significant numbers of students with disabilities from recurring national data collection programs and the variable or nonexistent disability-specific variables used to identify students in these data collection programs makes it all but impossible to use all the outcome information that is currently available at the national level.

Recommendations

The inability to extract comprehensive national outcome information at school completion for students with disabilities is not due to a lack of potential indicators in our national data collection programs. The exclusion of significant numbers of students with disabilities from many national data collection programs and the variable identification of these students by type of disability in these programs are the greatest impediments to the production of recurring national reports on the school completion status of students with disabilities. Recommendations to address these two concerns have been presented elsewhere (McGrew, Thurlow & Spiegel, 1993; McGrew, Thurlow, Shriner, & Spiegel, 1992).

However, improvements can still be made in the types of items included in national data collection programs. The goal of these improvements would be to increase the breadth of information on all students. Individuals and organizations charged with the design of national data collection programs are encouraged to review the following general suggestions.

1. Attention needs to be directed to the development of indicators related to accessing health care, advocating for themselves, accepting the consequences of their behavior, and satisfaction with education. The specific NCEO indicators are:

   - Percent of students who know when, where, and how to access health care (C1d)
   - Percent of students who effectively advocate for themselves (D2c)
   - Percent of students whose behavior reflects an acceptance of the consequences for behavior (e.g., makes restitution) (G1b)
   - Percent of students who are satisfied with level of achievement (H1a)
   - Percent of parents/guardians who are satisfied with level of achievement (H2a)
   - Percent of community (teachers, policymakers, employers, general public) who are satisfied with students' level of achievement (H3a)
   - Percent of community (teachers, policymakers, employers, general public) satisfied with students' progress toward achieving educational outcomes (G3a).

2. The NCEO conceptual model of outcomes should be reviewed for ideas on new outcomes or indicators to include in ongoing or future national studies. Consideration needs to be given to the development of variables to better measure outcomes related to satisfaction, accommodation and adaptation, personal and social adjustment, and responsibility and independence.

3. Individuals and organizations developing instrumentation for national data collection programs should review the instruments and methodology reports of the National Longitudinal Transition Study of Special Education Students (NLTS) for ideas on how to develop new indicators or strategies for measuring outcomes for <u>all</u> students.

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